

REMARKS

This Amendment is in response to the Office Action dated December 1, 2010. Applicant respectfully requests reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks.

I. CLAIM REJECTIONS – 35 USC § 102

Claims 15, 17-19, 21-25 and 27-28 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Magee, U.S. Publication No. 2003/0086508.

A. Claim 15

For each symbol, claim 15 includes a first step of obtaining a first estimate of the propagation channel. Each reference pilot is then corrected as a function of the first estimate. A second, distinct estimation step is then performed to obtain a second estimation of the propagation channel by analysis of the corrected reference pilot.

B. Magee

The **Magee** document is not relevant with regards to claim 15.

1. Single Channel Estimation

Indeed **Magee** does not disclose two steps of estimation but a single estimation consisting of:

Extracting pilots from the received signal (*paragraph [0023] : “... extracts pilot tones ...”*),

Carrying out an IFFT to obtain an channel impulse response (*paragraph [0023] : “... then performs an IFFT to get the channel impulse response ...”*),

Correcting this impulse response by calculating a phase offset vector (*paragraph [0024] : “... computes an offset vector, whose angle represents the phase offset ...”*

corrects and/or adjusts the channel impulse response ... to provide a phase corrected channel impulse response ...”),

Carrying out an FFT to obtain a channel estimation in the frequency domain (*paragraph [0025]: “ ... performs a FFT on the channel impulse response to provide a frequency domain response commonly referred to as a channel estimate ...”).*

2. Estimation with FFT as opposed to Interpolation of Extracted Pilots

Moreover, the channel estimation is obtained with an FFT in the **Magee** document, whereas the first estimation of the channel described in claim 15 is based on an interpolation in time/frequency of pilot extracts.

3. No Calculation of an Error Vector in Phase **and** Amplitude for Each Pilot

Furthermore, **Magee** does not disclose the step of **phase and amplitude correction** of each pilot extract by calculating an error vector in phase and amplitude for each pilot.

Indeed, **Magee** describes calculation of a vector of phase offset (*paragraph [0029]: “offset vector represents the phase offset of the channel impulse response”),* as opposed to an error vector in phase **and** amplitude.

Besides, **Magee** mentions possible additional corrections carried out on the impulse response, such as phase and amplitude corrections (*paragraph [0025]: “... additional corrections, based on known channel responses at the training tones, to the impulse response, such as amplitude and phase correction ...”).* However, this treatment does not correspond to the step of *correction in phase and amplitude of each extracted pilot by calculating “an amplitude and phase error vector for each of the at least one pilot ”* as in claim 15 of the discussed invention.

Indeed, the potential additional corrections disclosed in the **Magee** document are applied to the impulse response as a whole, and not independently to each extracted pilot. Also these corrections are not based on the calculation of an error vector in phase and amplitude for each pilot.

Thus, the Examiner's argument comparing the treatment carried out for each "burst" in the **Magee** document to the treatment carried out for each pilot in claim 15 of Applicant's claim 15

is erroneous. As indicated in paragraphs [0021] to [0023] of the **Magee** document, a “burst” does not correspond to a pilot.

For at least the reasons discussed above, Magee does not anticipate the elements of claim 15. Thus, Applicant respectfully requests that the rejections of claims 15, 17-19, 21-25 and 27-28 based on Magee be withdrawn.

II. CLAIM REJECTIONS – 35 USC § 103

A. **Claim 20**

Claim 20 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Magee and in further view of Zhang, U.S. Publication No. 2003/0112265.

Claim 20 of the present application recites that, “pilots with an amplitude less than a first predetermined minimum average threshold and/or greater than a second predetermined maximum average threshold are rejected” and thus not taken into account for “the calculation step for an amplitude and phase error vector”.

The **Zhang** document, especially the part cited by the Examiner (page 7, paragraph [0113]), describes FIG. 10, which represents an energy function graph of captured audio data, on which the energy level of the audio waveform for both noise and speech appear. This paragraph discloses that noise is rejected by the speech detection process, if it exceeds a minimum energy threshold 136.

The **Zhang** document does not disclose or suggest to compare the amplitude of the pilots themselves to a threshold, but only discloses an embodiment where the audio waveform is compared to a threshold.

Moreover, as explained above, as claim 15 is not anticipated by the **Magee** document, the combination of the **Magee** and **Zhang** documents is not relevant and claim 20 is new and non-obvious in view of these documents.

Finally, combining these two documents is not obvious to a person of ordinary skill in the art, as **Zhang** does not concern the domain of OFDM transmission, as does **Magee**.

B. Claim 26

Claim 26 was rejected under 35 U.S.C. 21103(a) as being allegedly unpatentable over Magee in further view of Fujii et al., EP 1542384.

The claim 26 of the present application recites that that the process of claim 15 is used “for correction of at least one phase and/or amplitude error common to two cells in a same OFDM . . . type symbol”.

The **Fujii** document, especially the part cited by the Examiner (page 7, lines 1-7), describes the possible presence of interferences coming from other OFDM cells, for example in OFDM-CDMA transmission, wherein the interferences influence the signal, and precision of phase error detection declines.

This document does not disclose or suggest a phase error detection common to two cells, but only points out the presence of interferences between many cells.

Moreover, as explained before, as claim 15 is not anticipated by **Magee** document, the combination of **Magee** and **Fujii** documents is not relevant, and claim 26 is novel and inventive.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: /David D. Brush/
David D. Brush, Reg. No. 34,557
900 Second Avenue South, Suite 1400
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

DDB:dme